

SENSITIVITY OF ITERATIVE SPECTRALLY SMOOTH
TEMPERATURE/EMISSION SEPARATION TO INSTRUMENT NOISE

ABSTRACT OF THE DISCLOSURE

A method for estimating the error statistic for retrieved temperature and emissivity of a surface material includes determining the second order analytical error propagation from a measured radiance that differs from the true radiance by additive gaussian noise, which is independent in each band. The radiance error is translated into a diagonal covariance matrix and an analytical estimate results in a determination of the standard deviation and bias of surface temperature. Further, the method for estimating the error statistic utilizes Monte Carlo simulation from a sufficiently large ensemble of radiance spectra for the retrieved surface temperature and emissivity. Temperature and emissivity of the surface material were retrieved using ISTE algorithm.